

REMARKS ON THE GENUS *PLEUROTROPIS* WITH DESCRIPTION
OF A PARASITE OF *TRACHELUS TABIDUS* FABRICIUS.
(HYMENOPTERA: CHALCIDOIDEA.)

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The occurrence of the exotic sawfly, *Trachelus tabidus* Fabricius, in America as a possibly serious pest of wheat was brought to light during the summer of 1918. A paper by the writer treating of this sawfly has already been published by the U. S. Department of Agriculture.¹ Mention is made in this article of the rearing by Mr. W. R. McConnell of a parasite belonging to the genus *Pleurotropis* and apparently representing an undescribed species.

In view of the foreign origin of the host it is natural to suspect, though the conclusion does not necessarily follow, that the parasite too is exotic. It has proved impossible to reconcile the insect with the description of any exotic form, however, and as it does not conform to any described American species it seems desirable to describe it.

In the process of identifying this species the writer was led into making a more or less careful study of the characters, especially those of the antennae, appertaining to the genus *Pleurotropis*. The results of this study are discussed herewith.

Family **EULOPHIDAE.**

Subfamily **Entedoninae.**

Genus **PLEUROTROPIS.**

Pleurotropis Foerster, Hymen. Stud. II, 1856, p. 78.

Pseudacriasoides Girault, Descriptiones Stellarum Novarum, 1917, p. 9.

Epipleurotropis Girault, Descriptiones Hymenopterorum Chalcidoidicarum cum Observationibus, 1917, p. 7.

The two genera listed as synonyms are based upon characters which, after examination of the types, I can not accept as generic.

Pseudacriasoides has as type *Pleurotropis utahensis* Crawford. The generic description by Girault is as follows: "Antenna 9-jointed, three ring-joints, the club 2-jointed; male antenna 10-jointed, three ring-joints, the club 2-jointed, the scape dilated. Scutellum with a median sulcus at base. Otherwise like *Pleurotropis*."

*Pleurotropis utahensis*² was described from four female and six male specimens of which the holotype was reared at Salt Lake City, Utah, from *Agromyza parvicornis* mining the leaves of corn, while the allotype and all paratypes were reared from

¹Bul. 834, U. S. Dept. Agric., 1920, 18 pp.

²Proc. U. S. Nat. Mus., vol. 45, 1913, p. 316.

Cephus sp. (subsequently determined as *Cephus cinctus* Norton) boring the stems of wild grasses and grain at Salt Lake City and Kimballs, Utah. In addition to the type material there are now in the National collection eleven specimens reared from *Cephus cinctus* at Missoula, Montana, and determined by the writer as *Pleurotropis utahensis*.

The different host records for the holotype and the paratypes are ground for suspicion that the latter may represent a different species. If so, however, Mr. Crawford who compared them when describing the species failed to find characters to separate them. Apparently also Mr. Girault, who saw all of the material, accepted it as all belonging to the same species. Otherwise it is to be presumed that he would have proposed a new specific name for the paratypes. After a careful re-examination of all the material and despite the antennal differences discussed later, the writer is still of the opinion that all represent the same species. As in all such cases unsupported by careful biological studies the question of whether one or more species is represented in a given lot of material is merely a matter of personal opinion.

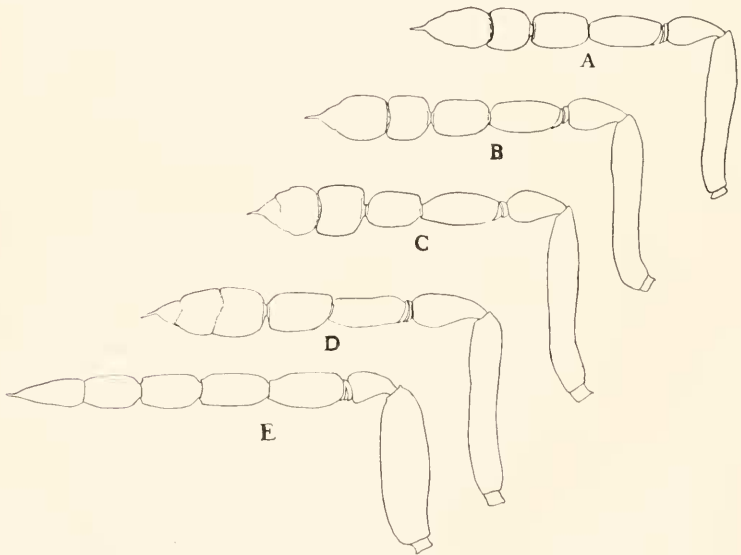


FIG. 1.—*Pleurotropis utahensis* Crawford. A, B, C, and D, female antennae illustrating variations. E, male antenna.

As shown by the accompanying figures which illustrate antennae taken from four different females and mounted in balsam there is considerable variation in the antennal characters

in this lot of material. Figure 1, A is from the holotype; B from a paratype; C and D from two of the Missoula, Montana, specimens. Except for the differences in antennae the specimens are inseparable, though differing somewhat in size. A glance at the figures will show that the differences lie in the relative closeness of the union between joints 8 and 9 of the antenna and the degree of development of a suture dividing joint 9 into two joints. The relative size and shape of the joints is practically the same for all four antennae. In figure 1-D, we have what appears to be a 2-jointed funicle and a 3-jointed club. In C, joints 8 and 9 are not nearly so closely united and the suture dividing the ninth is not so distinct. This antenna may be said either to have a three-jointed funicle and a two-jointed club, or a two-jointed funicle and a three-jointed club, the interpretation depending entirely upon the individual making the examination. Figures A and B are alike and differ from C only in the apparent absence of the suture dividing the ninth joint.

Although the greatest care was exercised in making these mounts there can be little doubt but that to some extent the apparent differences are to be accounted for by the imperfect definition of subopaque objects when mounted in balsam. Careful examination, before mounting, of the antennae from which figures A and B were made showed both to have a definite though very delicate constriction near the apex corresponding in position to the suture dividing the ninth joint in figures C and D. When mounted on a slide this suture was entirely invisible. The antennal mount made by Girault from the holotype specimen and upon which he based his description of the genus *Pseudacriasoides* was removed from the slide and it too showed a distinct constriction or shallow groove on the ninth joint. When remounted in balsam this groove again became invisible, corresponding in appearance to figure A which was drawn from the other antenna of the same specimen.

The pressure of the cover glass probably accounts to some extent for the greater separation between joints 8 and 9 in figures A, B, and C. Joint 8 is apparently more or less cup-shaped at apex, the base of joint 9 fitting into the aperture. The articulation between the two joints is free nevertheless, and not ankylosed as are the club joints.

Antennae from the same specimens are not always exactly alike in respect to the characters in question. For example, while figure B shows the ninth joint without a dividing suture the other antenna from the same individual when mounted in balsam shows a more or less distinct suture. Also the mate to the antenna from which figure D was drawn appears to have joints 8 and 9 more distinctly separated.

Whether one or more than one species is represented in this

material, it affords a good illustration of the folly of basing genera upon such slight differences in the antenna. The material under consideration, as already pointed out, has been examined by three different students of Chalcidoidea and accepted by all three as a single species. Yet from an examination of slide-mounted antennae alone, the four individuals, antennae of which are figured, would probably be run in any of the existing generic keys to three different genera. The genera to which they would be assigned would depend largely upon whether the individual making the examination chose to call the eighth antennal joint a part of the club or a part of the funicle, upon how many of the minute ring-joints he was able to see, and upon whether or not the particular mount examined revealed the suture dividing the ninth joint. The determination of the generic position would depend to a considerable extent upon the individuality of the particular specimen from which the antenna for mounting was taken but more largely upon the accidents of mounting.

The antenna of the male allotype of *Pleurotropis utahensis* (Figure 1, E) is ten-jointed. The scape is only slightly more dilated than in typical species of the genus. The flagellum tapers from base to apex and the club is hardly differentiated from the funicle although joints 9 and 10 are more or less ankylosed and probably represent the club. If so the funicle is 3-jointed as in typical *Pleurotropis*. There are three distinct though minute ring-joints.

Most writers have credited the genus *Pleurotropis* with only one ring-joint. Waterston (Bull. Ent. Research, vol. 5, 1915, p. 343) considers the ring a single joint but states that this joint consists of two to three laminae which are distinctly separated only ventrally. With this conception I can not wholly agree. Mounts of antennae from many of the species in the National collection have been examined with the result that in most cases it has been possible to recognize three complete ring-joints. In some cases there are apparently only two, while in a few instances owing to the position in which the antenna was mounted it was impossible to determine the number. The ring-joints are always more or less telescoped into each other but are separated both above and below. When the flagellum is bent upward it tends to pull the ring-joints apart ventrally while pressing them more closely together dorsally and this may account for the impression gained by Waterston.

It is the writer's belief that while *Pleurotropis* normally has ten-jointed antennae in both sexes consisting of scape, pedicel, three ring-joints, a 3-jointed funicle and a 2-jointed club, the genus can not be limited to this antennal formula because one finds all degrees of separation and solidification of the apical two or three joints of the flagellum, it is not always possible to

determine whether certain joints are a part of the club or a part of the funicle, and one can seldom be absolutely certain as to the exact number of ring-joints in a given antenna. While these antennal differences, within certain limits, are undoubtedly of importance as specific characters their use as generic characters can only result in adding confusion to a situation that is already tangled enough.

Disregarding in large part the antennae and recognizing as the essential features of the genus the medially bicarinate propodeum, together with those other characters ascribed to the genus by Waterston, will bring together a natural group of species which may be easily recognized and readily defined. The group will include species having widely different types of antennae, ranging from those having four ring-joints, a 2-jointed funicle and a solid club, as in the male of *clisiognathus* Waterston, to those having two ring-joints, four distinctly pedicellated funicle joints, and a solid club as in the female of *atamiensis* Ashmead. The fact that antennae of the two sexes of the same species not infrequently exhibit such widely different characters as illustrated by Waterston in the species *clisiognathus* is proof enough that antennal characters are not of generic value in this group.

The scutellar character referred to by Girault for the genus *Pseudacriasoides* is of even less value than the antennal characters. The alleged median groove on the base of scutellum is nothing more than a very slight longitudinal depression marking the line of convergence of the sculpture from the two sides of the scutellum. In some specimens it does not appear at all.

Epipleurotropis Girault is based on *Epipleurotropis longfellowi* Girault, the type material of which consists of a single male specimen the head of which was removed by the describer and crushed beneath a cover glass. The abdomen is missing. Judged by what remains of this specimen this is a distinct and well marked species but not sufficiently different to warrant separation from *Pleurotropis*. The scutellum is smooth medially and mostly so laterally but with a narrow longitudinal depressed line of sculpture on each side, appearing as a shallow groove. The propodeum does not differ from ordinary *Pleurotropis* except that the medial carinae are slightly less prominent than usual. The mandibles are bidentate with the inner margin exhibiting two or three fine serrations, a character common to a number of species of *Pleurotropis* as pointed out by Waterston. The antennae are of the same type as the male of *Pleurotropis utahensis*.

***Pleurotropis benefica*, new species.**

Apparently closely related to *Pleurotropis nigritarsis* Thomson but differing from the description of that species principally in

antennal characters. Also similar to *Pleurotropis utahensis* Crawford but is readily distinguished from that species by the dark tarsi, by the relatively longer and more hairy antennal joints, by the more strongly sculptured and differently colored front of the head, and by slight differences in the propodeum and abdominal petiole.

Female.—Length 3 mm. Head slightly broader than the thorax; vertex rather flat, separated from the occiput by a sharp carinate margin, and closely and strongly punctate; ocelli in an obtuse triangle, the lateral ocelli removed from the eye-margin about the long diameter of an ocellus; occiput concave, opaquely sculptured with a smooth line medially; eyes large, sparsely clothed with whitish hairs, deeply emarginate within and less strongly so behind; posterior orbits strongly punctate and clothed with rather coarse dark colored hairs; malar space short, about equal in length to the antennal pedicel; front of the head inflexed, above the transverse groove shining with shallow reticulations, between the transverse groove and base of antennae closely and deeply punctate and subopaque, just below the base of antennae weakly reticulated and shining, mouth-border finely opaquely punctate; antennae 10-jointed, inserted slightly

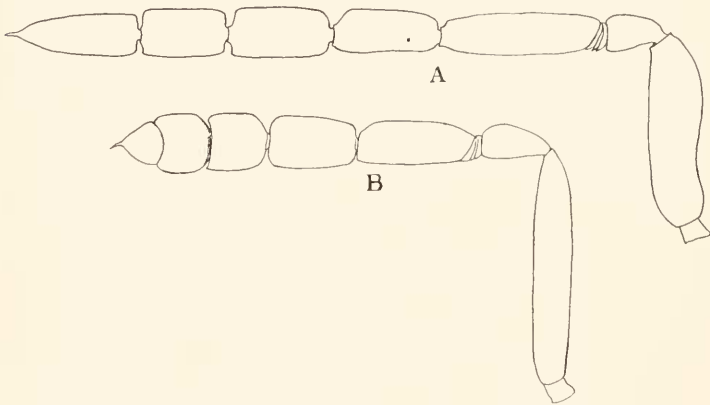


FIG. 2.—Antennae of *Pleurotropis benefica* Gahan. A, male; B, female.

above the lower eyemargins and separated at base by a distinct ridge; scape slender, slightly curved and more or less flattened and shining metallic on the outer side, sculptured and darker on the inner side with seven to eight erect hairs on the ventral margin; pedicel about twice as long as thick; three small transverse ring-joints; flagellar joints all distinctly hairy; first funicle joint distinctly the longest, about three times as long as thick; second a little thicker than the first and approximately twice as long as thick; third about as long as thick and a little more closely joined to the following joint than to the preceding; club 2-jointed, about equal in length to the second funicle joint, the basal club joint subquadrate and as broad as the funicle, second or apical joint much narrower, conical, incompletely separated from the basal joint and terminating in a short but distinct spine; pronotum above with a narrow smooth posterior

margin set off by a carina from the anterior declivous portion which is sculptured; mesoscutum strongly punctate, the parapsidal grooves complete and each terminating posteriorly in a large foveiform depression, the surface within the depression as strongly sculptured as the remainder of mesoscutum; scutellum much longer than broad, sculptured like the mesoscutum, except that on the anterior half of scutellum the punctures are somewhat smaller; axillae above sculptured like mesoscutum, below much more finely punctate; propodeum polished, the median carina forked a little behind the middle, the lateral folds straight and well developed, spiracular furrows deep; posterior lateral angles of the propodeum produced into a short triangular tooth-like process just above the attachment of the hind coxae; mesosternum nearly smooth, the median groove terminating anteriorly in a foveiform enlargement; abdomen not quite as long as the head and thorax, pointed ovate; petiole large, broader than long, opaque, carinately margined laterally, above and below, and with the anterior margin produced dorsally into a short flange which overlaps the posterior end of the propodeum; second segment comprising about one-third the length of the abdomen, smooth basally, the apical half weakly reticulated; third and following tergites all finely sculptured, subopaque, and distinctly though sparsely hairy; third tergite about one-third as long as the second; fourth to sixth subequal and each about two-thirds as long as the third; seventh approximately equal to the third; ovipositor concealed; submarginal vein of the forewing distinctly less than half as long as the very long marginal, with two or three upright black bristles above; proximal end of the marginal vein with a similar bristle, also; post-marginal and stigmal veins short and subequal. General color bright bluish-green; head darker than the thorax with the occiput black, and the face blackish, except that the area just below the insertion of antennae is coppery and the triangular area above the transverse groove is slightly more bluish; antennae entirely metallic black; legs concolorous with the thorax, their tarsi brownish black; second tergite bright blue-green; the petiole and segments beyond the second brownish-black; wings hyaline, the venation dark brown.

Male.—Length 2.2 mm. Antennae 10-jointed, scape slightly and nearly uniformly thickened, about four times as long as thick; pedicel not much longer than thick; three ring-joints transverse; flagellum longer but no more hairy than in the female; first funicle joint four times, second two and one-half times, and the third slightly more than twice as long as thick; fourth joint barely twice as long as thick; club solid, about as long as the second funicle joint and terminating in a distinct spine; abdomen short, the segments beyond the fourth retracted and mostly concealed; petiole longer than broad, almost as long as the hind coxae, and without distinct marginal carinae. Otherwise like the female except that the head is for the most part concolorous with the thorax, only the occiput and a transverse patch on the vertex embracing the posterior ocelli being black.

Type-locality.—Mount Holly Springs, Pennsylvania.

Type.—Cat. No. 24,166, U. S. Nat. Mus.

Host.—*Trachelus tabidus* Fabricius.

Eleven females and four males reared by W. R. McConnell, April 13 to 19, 1919, from hibernating prepupal larva of the black grain-stem sawfly and recorded in the Bureau of Entomology under Webster No. 18,700; one female paratype reared